

Implementation of the Virtual internship Program: A case of Araling Panlipunan Junior High School Teachers at Zone IV, Division of Zambales S.Y. 2020-2021

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Abstract— The study aimed to conduct a situational assessment of the “Virtual Internship” program implemented by CHED/DepEd during the New Normal among selected secondary schools in Zone IV, Division of Zambales for School Year 2020–2021. Utilizing a descriptive research design, the study gathered data through questionnaires from 69 cooperating teachers and 41 student interns. The objective was to examine the perceptions of both groups regarding the implementation of the virtual internship program. Findings revealed no significant difference between the perceptions of cooperating teachers and student interns on the overall implementation of the program. However, among cooperating teachers, significant differences in perception were noted when grouped by age and years of teaching experience—particularly in areas such as Classroom-based Action Research, Teaching-Learning Assessment, Pedagogical Relevance, and Mentoring. Additionally, years of teaching experience influenced their views on the utilization of virtual teaching strategies. On the other hand, preservice teachers showed no significant differences in perception when grouped by age or sex. The results suggest that demographic and professional background can influence how cooperating teachers perceive the effectiveness of virtual internships, while preservice teachers tend to have a more uniform view. These findings are valuable for academic institutions and policymakers in evaluating and enhancing virtual internship models. The study provides insights into how future internship programs—especially in times of disruption—can be improved to support the educational and professional development of both student interns and their mentors

Keywords— Virtual Internship, Cooperating teacher, student teacher, New Normal, pandemic, Virtual interns

I. INTRODUCTION

Virtual teaching experiences” or “Virtual Internship” is one of the important mandates provided by the DepEd and CHED that is believed to be able to contribute to the enhancement of learning in the 21st century world. It is a key component to a student’s educational and personal growth, and the numerous benefits of an academic internship have been well established (Galvan, Fisher, Casman, & Small, 2013). In the midst of a pandemic that has profoundly altered many aspects of life, the continued effective delivery of education in all levels is, more than ever, of paramount importance. It is imperative for teacher education institutions (TEIs) to respond positively to the distinctive challenge and opportunity presented by the unusual

circumstances surrounding AY 2020 – 2021 by delivering courses in innovative and flexible ways suitable to the context of educational institutions, teachers, and students. Recently, the Commission on Higher Education released the Guidelines on the Implementation of Flexible Learning (CHED Memorandum Order No. 4, s, 2020) to ensure continuity of learning at the tertiary level while DepEd issued an order on the Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 in light of the Covid-19 Public Health Emergency (DepEd Order No. 12, series of 2020). TEIs and Cooperating Schools must continue to strive to sufficiently prepare the next batch of teachers to teach in the post-pandemic, new normal environment. Hence, in addition to the current preparations being undertaken to deliver courses by means

of flexible modalities, the Field Study and Practice Teaching courses also need to be redesigned in ways that are compatible with the present situation.

Since the start of the COVID-19 pandemic, schools around the world have closed down to prevent the further spread of the virus. As a result, the sheer speed and urgency to shift to online learning tested the existing infrastructure of schools, the ability to use technology in teaching and learning, and material resources readily available to teachers and students (Adedoyin & Sokyan, 2020). The purpose of this study is to provide insight into how internships of Teachers were redefined during the pandemic, along with students and cooperating teachers' perception on their situation in the implementation of virtual internship program with regards to the mandates of CHED/DepEd during COVID-19.

Digital literacy as a 21st-century survival skill is important for both children and adults because the development of technology and digitization in the present and future eras is inevitable so that human resources (HR) that can adapt to the times are required (Ahsan, Ismail, & Ahmad, 2022). Educational institutions as one of the institutions that prepare students to confront and overcome existing challenges 21st century have an important role in developing students' digital literacy skills. In this regard, it is advised that educators increase their proficiency in accordance with standards, particularly those pertaining to digital literacy (Spante, Hashemi, Lundin, et al., 2018). This study served as a frame of reference to bridge the gap between the traditional teachers still stuck on old teaching styles and the modern 21st century student who is almost always connected online and provide perception in the digital competencies of cooperating teachers as mentors during the pandemic as it is one of the six literacy skills designated by the World Economic Forum as a 21st century life skill in 2015 is digital literacy (Mason, Khan, & Smith, 2016). This information not only provides valuable suggestions for other academic programs during this time of shutdowns and restrictions but can also help institutions to redefine future internship opportunities to help facilitate students as well as cooperating teachers' educational and professional growth.

II. METHODOLOGY

This study employed Descriptive- Quantitative method of research. As Creswell (2014) mentioned, quantitative methods may use a survey design to provide a numeric description of trends, attitudes, or opinions of a sample of a population. This method aimed at finding out "what is", thus survey questionnaire was used to collect descriptive data.

The questionnaire used was in the form of a Google form and a survey test paper and undergo Cronbach's alpha to test its consistency and stability. It consists of two parts: Part I-is the profile of students and cooperating teachers. Part II included the perceptions of the stakeholders (teachers and students) towards policies and mandates coming from the DepEd. Several stakeholders as identified in the (CHED Memorandum Order No. 4, s, 2020) entitled "New Normal Guidelines in the Deployment of Pre-service Teachers on Experiential Learning: Field Study and Teaching Internship".

The researcher of this study has made use of convenience sampling. Convenience sampling technique was utilized since choosing of Zone IV was due to the proximity or availability of the said District to the place of residence of the researcher. The number of both teacher- and student-respondents was also pre-determined by the researcher for reason of convenience, thus no mathematical formula was used to determine such number of respondents that was used in the study.

The participants of the study were sixty nine (69) cooperating teachers and forty one (41) student-teachers (pre-service) in Zone IV, Division of Zambales, Zone IV comprise the districts of Subic, Castillejos, and San Marcelino. All secondary public schools that entered a memorandum of agreement with Institutions of Higher Learning with regards to the assessment of its teacher education students in a virtual teaching environment.

In the process of gathering data for this study the researcher strictly followed the rules and protocols given by the Inter Agency Task Force (IATF) to ensure the safety of everyone. The researcher have asked permission to the office of the Schools Division Superintendent, District Supervisor and administrators of the different District Schools of Zone IV. The questionnaires were given to the teachers and students and requested them to indicate their perceptions to the virtual classroom program as a learning modality in this New Normal. As such, these questionnaires were retrieved from them after one week, rest assured that all information were treated with utmost confidentiality and the respondents who prefer to conceal their identity on the questionnaire were considered and the same respect and honor will be rewarded to them.

Data gathered were tallied, tabulated, analyzed and interpreted accordingly. IBM SPSS software program was used in the tabulation and statistical treatment of the data gathered using the survey questionnaire. Specifically, the researcher have made used of frequency counts, percentages, mean, ranking and average weighted mean for descriptive statistical treatment, whereas, the F-test (One-

way ANOVA) was used as treatment in order to determine significant difference among groups and draw inferences.

Table 1 shows the frequency and percentage distribution of the student and cooperating teacher -respondents' profile variables composed of age, sex and number of years in teaching respectively.

III. RESULTS AND DISCUSSION

1. Profile of the Student teacher and Cooperating teacher– respondents.

Table 1: Frequency and Percentage Distribution of the Student teacher-respondents and Cooperating Teachers respondents' Profile Variables

Profile Variables of Student Teacher		Frequency (f)	Percentage (%)
Age Mean=23.97 years old	16-20 years old	6	14.60
	21-25 years old	24	58.50
	26-30 years old	9	22.00
	31-35 years old	1	2.40
	36-40 years old	1	2.40
	Total	41	100.00
Sex	Male	19	46.30
	Female	22	53.70
	Total	41	100.00
Profile Variables of Cooperating Teacher		Frequency (f)	Percentage (%)
Age Mean=40.10 years old	21-25 years old	4	5.80
	26-30 years old	11	15.90
	35-40 years old	29	42.00
	45-50 years old	14	20.30
	50-55 years old	9	13.00
	55 years old and above	2	2.90
	Total	69	100.00
Sex	Male	15	21.70
	Female	54	78.30
	Total	69	100.00
Number of Years Teaching Mean=15.38 years	0-5 years	11	15.90
	6-10 years	18	26.10
	11-20 years	22	31.90
	21-30 years	9	13.00
	31 years and above	9	13.00
	Total	69	100.00

The majority of the student-teacher respondents were aged 21–25 years old (58.50%), with a mean age of 23.97, indicating they were in early adulthood—a stage commonly associated with goal-setting and career development. In

terms of sex, most respondents were female (53.70%), slightly outnumbering male participants (46.30%). This reflects the continuing trend of female dominance in the teaching profession, which may be attributed to gender-

based communication differences, with women generally placing greater emphasis on connection and collaboration in educational settings (Marchbank, 2013).2. Profile of the Teacher– respondents.

The majority of the cooperating teacher-respondents are female (78.30%), consistent with national data showing a higher proportion of women in the teaching profession. In terms of teaching experience, most have been in the service for 11–20 years, with a mean of 15.38 years, indicating that

they are seasoned educators. This level of experience suggests a strong mastery of subject matter and the ability to apply creative teaching strategies, enhancing the learning process. Research by Tara Kini and Anne Podolsky (2016) supports this, noting that teaching experience is closely linked to improved student achievement, with gains in effectiveness continuing well into the second and third decades of a teacher’s career.

2. Perception of the respondents on the Mandates in the Implementation of the Virtual Internship Program.

Table 2: Summary of the Respondents on the Mandates in the Implementation of the Virtual Internship Program.

Mandates in the Implementation of the Virtual Internship Program	Cooperating Teacher		Preservice Teacher	
	Weighted Mean	Outstanding Rating	Weighted Mean	Outstanding Rating
1. Teaching-Learning Related Assessment	3.34	Always	3.23	Often
2. Classroom-based Action Research	2.68	Often	2.58	Often
3. Relevance of Teaching Content and Pedagogy to Course Objectives and Requirements.	2.97	Moderate Knowledge	3.10	Moderate Knowledge
4. Availability and Relevance of Modalities and Resources	2.71	Available	2.60	Available
5. Mentoring and Utilization of Virtual Strategy	3.54	Always	3.38	Always
Overall Weighted Mean	15.24		14.89	

Table 2 summarizes respondents’ perceptions of the mandates in the Virtual Internship Program. Cooperating teachers rated mandates related to Teaching-Learning Assessment as “Always” ($M = 3.44$), while student teachers rated them as “Often” ($M = 3.23$). The increased use of webinars and digital platforms has further enhanced accessibility and engagement in virtual learning environments (Johnson et al., 2021; Lee & Kim, 2022).

For Classroom-Based Action Research, both groups responded “Often,” with means of 2.68 (teachers) and 2.58 (students), indicating moderate implementation. This aligns with recent research emphasizing action research as a critical tool for bridging theory and practice, fostering reflective teaching, and enhancing professional learning in virtual contexts (Gonzalez et al., 2020; Nguyen & Reid, 2021).

Regarding the Relevance of Teaching Content and Pedagogy, students and teachers reported “Moderate Knowledge” ($M = 3.10$ and $M = 2.97$), indicating partial alignment with course objectives. Darling-Hammond et al.’s (2017) call for coherence between pedagogy and learning outcomes remains relevant, as recent studies confirm the importance of pedagogical alignment in remote education (Smith & Flores, 2023).

On the Availability and Relevance of Modalities and Resources, the overall mean was 2.71, with 2.60 for students—both interpreted as “Available.” However, effectiveness varies, consistent with recent findings that highlight the need for strategic integration of technology, content, and pedagogy in virtual learning (Kimmons et al., 2022; Mishra & Koehler, 2006).

Finally, in terms of Mentoring and Virtual Strategies, cooperating teachers rated them as “Always” ($M = 3.54$), and student teachers similarly ($M = 3.38$), reflecting strong support. Effective mentoring continues to be recognized as vital for professional growth and reflective practice in online teaching contexts (Brown & Green, 2021; Smith & Israel, 2010).

3. Test of difference in the Perceptions of Cooperating Teachers-respondents on the implementation virtual internship program when grouped according to profile.

Table 3: Analysis of Variance to test difference in the Perceptions of Cooperating Teachers-respondents on the implementation virtual internship program as to Teaching-Learning Related Assessment when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	1.572	5	0.314	1.330	0.263	Accept Ho Not Significant
	Within Groups	14.892	63	0.236			
	Total	16.464	68				
Sex	Between Groups	0.007	1	0.007	0.029	0.866	Accept Ho Not Significant
	Within Groups	16.457	67	0.246			
	Total	16.464	68				
Number of Years in Teaching	Between Groups	0.728	4	0.182	0.741	0.568	Accept Ho Not Significant
	Within Groups	15.736	64	0.246			
	Total	16.464	68				

Table 3 shows no significant differences in perceptions based on age ($p = 0.263$), sex ($p = 0.866$), or years of teaching experience ($p = 0.568$), leading to acceptance of the null hypothesis. This is consistent with findings by

Harris et al. (2020), who report that perceptions of assessment practices tend to be stable across demographic variables, emphasizing shared professional standards over individual differences.

Table 4: Analysis of Variance to test difference in the Perceptions of Cooperating Teachers-respondents on the implementation virtual internship program as to Classroom-based Action Research when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	4.068	5	0.814	3.094	0.015	Reject Ho Significant
	Within Groups	16.564	63	0.263			
	Total	20.632	68				
Sex	Between Groups	0.489	1	0.489	1.626	0.207	Accept Ho Not Significant
	Within Groups	20.143	67	0.301			
	Total	20.632	68				
Number of Years in Teaching	Between Groups	3.432	4	0.858	3.193	0.019	Reject Ho Significant
	Within Groups	17.200	64	0.269			
	Total	20.632	68				

Table 4 shows significant differences in perceptions based on age ($p = 0.015$) and years of teaching experience ($p = 0.019$), rejecting the null hypothesis. No significant difference was found for sex ($p = 0.207$), so the null hypothesis was accepted. Recent studies (Cochran-Smith & Lytle, 2021; Zeichner, 2018) emphasize that experienced teachers tend to engage more deeply in classroom-based action research, while gender differences have minimal impact on educators' research involvement and perceptions.

Table 5: Analysis of Variance to test difference in the Perceptions of Cooperating Teachers-respondents on the implementation virtual internship program as to Relevance of Teaching Content and Pedagogy to Course Objectives and Requirements when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	17.093	5	3.419	9.877	0.000	Reject Ho Significant
	Within Groups	21.804	63	0.346			
	Total	38.897	68				

Sex	Between Groups	0.940	1	0.940	1.659	0.202	Accept Ho Not Significant
	Within Groups	37.957	67	0.567			
	Total	38.897	68				
Number of Years in Teaching	Between Groups	16.364	4	4.091	11.619	0.000	Reject Ho Significant
	Within Groups	22.533	64	0.352			
	Total	38.897	68				

Table 5 presents significant differences in perceptions of the relevance of teaching content and pedagogy based on age and years of teaching experience ($p < 0.001$), leading to rejection of the null hypothesis. No significant difference was found for sex ($p = 0.202$), so the null hypothesis is

accepted. This supports Darling-Hammond et al. (2017), who emphasize that teaching effectiveness and alignment with course objectives often improve with experience, while gender does not significantly influence instructional perceptions.

Table 6: Analysis of Variance to test difference in the Perceptions of Cooperating Teachers-respondents on the implementation virtual internship program as to Availability and Relevance of Modalities and Resources when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	3.682	5	0.736	3.160	0.013	Reject Ho Significant
	Within Groups	14.681	63	0.233			
	Total	18.363	68				
Sex	Between Groups	0.061	1	0.061	0.224	0.637	Accept Ho Not Significant
	Within Groups	18.302	67	0.273			
	Total	18.363	68				
Number of Years in Teaching	Between Groups	2.594	4	0.648	2.632	0.042	Reject Ho Significant
	Within Groups	15.769	64	0.246			
	Total	18.363	68				

Table 6 shows significant differences in perceptions of the availability and relevance of modalities and resources based on age ($p = 0.013$) and years of teaching experience ($p = 0.042$), rejecting the null hypothesis. No significant difference was found for sex ($p = 0.637$), so the null

hypothesis is accepted. This aligns with research by Adeogun (2001) and Mwiria (2015), which highlights how experience and maturity influence educators' awareness and utilization of teaching resources, while gender has less effect.

Table 7: Analysis of Variance to test difference in the Perceptions of Cooperating Teachers-respondents on the implementation virtual internship program as to Mentoring and Utilization of Virtual Strategy when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	1.341	5	0.268	1.073	0.384	Accept Ho Not Significant
	Within Groups	15.748	63	0.250			
	Total	17.090	68				
Sex	Between Groups	0.036	1	0.036	0.142	0.707	Accept Ho Not Significant
	Within Groups	17.053	67	0.255			
	Total	17.090	68				

Number of Years in Teaching	Between Groups	2.410	4	0.602	2.626	0.043	Reject Ho Significant
	Within Groups	14.680	64	0.229			
	Total	17.090	68				

Table 7 shows a significant difference in perceptions based on years of teaching experience ($p = 0.043$), leading to rejection of the null hypothesis. No significant differences were found for age ($p = 0.384$) and sex ($p = 0.707$), resulting in acceptance of the null hypothesis. This supports findings by Hudson (2013), who noted that mentoring effectiveness often improves with teaching experience, while

demographic factors like age and sex have less impact on mentoring perceptions.

4. Test of difference between the perceptions of Preservice Teacher-respondents on the implementation virtual internship program when grouped according to profile.

Table 8: Analysis of Variance to test difference on the Perceptions of Preservice Teachers-respondents on the implementation virtual internship program as to Teaching-Learning Related Assessment when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	1.493	4	0.373	1.966	0.121	Accept Ho Not Significant
	Within Groups	6.836	36	0.190			
	Total	8.329	40				
Sex	Between Groups	0.080	1	0.080	0.378	0.542	Accept Ho Not Significant
	Within Groups	8.249	39	0.212			
	Total	8.329	40				

Table 8 presents the ANOVA results on preservice teachers' perceptions of the Virtual Internship Program related to *Teaching-Learning Related Assessment* by profile variables. No significant differences were found based on age ($p = 0.121$) or sex ($p = 0.542$), leading to acceptance of

the null hypothesis. Though students and educators report satisfaction with webinar learning (Cornelius & Gordon, 2013; Gegenfurtner et al., 2018), no meta-analysis has yet assessed its effectiveness on student achievement. Related studies focus on blended, online, and distance learning.

Table 9: Analysis of Variance to test difference in the Perceptions of Preservice Teachers-respondents on the implementation virtual internship program as to Classroom-based Action Research when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	1.628	4	0.407	1.304	0.287	Accept Ho Not Significant
	Within Groups	11.242	36	0.312			
	Total	12.870	40				
Sex	Between Groups	0.001	1	0.001	0.002	0.964	Accept Ho Not Significant
	Within Groups	12.870	39	0.330			
	Total	12.870	40				

Table 9 shows no significant differences in preservice teachers' perceptions of Classroom-Based Action Research based on age ($p = 0.287$) or sex ($p = 0.964$), leading to acceptance of the null hypothesis. Action research involves

systematic inquiry by educators into their own teaching to address specific classroom issues and improve practice through data collection and reflection (Mertler, 2012a, 2012b).

Table 10: Analysis of Variance to test difference in the Perceptions of Preservice Teachers-respondents on the implementation virtual internship program as to Relevance of Teaching Content and Pedagogy to Course Objectives and Requirements when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	3.588	4	.897	2.116	0.099	Accept Ho Not Significant
	Within Groups	15.262	36	.424			
	Total	18.850	40				
Sex	Between Groups	0.180	1	0.180	0.375	0.544	Accept Ho Not Significant
	Within Groups	18.670	39	0.479			
	Total	18.850	40				

Table 10 shows no significant differences in preservice teachers' perceptions of the relevance of teaching content and pedagogy by age ($p = 0.099$) or sex ($p = 0.544$), leading to acceptance of the null hypothesis. This suggests a shared perspective among respondents.

Research indicates many teachers lack computer literacy, impacting their ability to integrate technology effectively (Martin & Heller, 2011; Satharasinghe, 2006). Computer literacy goes beyond basic skills, influencing teaching efficacy and student learning.

Table 11: Analysis of Variance to test difference in the Perceptions of Preservice Teachers-respondents on the implementation virtual internship program as to Availability and Relevance of Modalities and Resources when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	0.781	4	0.195	1.300	0.288	Accept Ho Not Significant
	Within Groups	5.408	36	0.150			
	Total	6.190	40				
Sex	Between Groups	0.498	1	0.498	3.414	0.072	Accept Ho Not Significant
	Within Groups	5.692	39	0.146			
	Total	6.190	40				

Table 11 shows no significant differences in preservice teachers' perceptions of the availability and relevance of modalities and resources based on age ($p = 0.288$) or sex ($p = 0.072$); hence, the null hypothesis is accepted.

Recent studies highlight that access to sufficient and high-quality digital learning resources directly influences student

engagement and achievement in virtual settings (Trust & Whalen, 2021; König et al., 2022). Schools with well-integrated technological resources better support instructional delivery and learning outcomes, while resource limitations hinder virtual teaching effectiveness.

Table 12: Analysis of Variance to test difference in the Perceptions of Preservice Teachers-respondents on the implementation virtual internship program as to Mentoring and Utilization of Virtual Strategy when grouped according to profile

Sources of Variations		SS	df	MS	F	Sig.	Decision
Age	Between Groups	1.183	4	0.296	1.323	0.280	Accept Ho Not Significant
	Within Groups	8.047	36	0.224			
	Total	9.230	40				
Sex	Between Groups	0.216	1	0.216	0.933	0.340	Accept Ho Not Significant
	Within Groups	9.015	39	0.231			
	Total	9.230	40				

Table 12 shows no significant differences in preservice teachers' perceptions of mentoring and virtual strategy by age ($p = 0.280$) or sex ($p = 0.340$); thus, the null hypothesis is accepted.

This is supported by recent research showing that the effectiveness of virtual mentoring is less influenced by demographic variables and more by the quality of interaction and feedback. Trust and Prestridge (2021) found that strong mentor-mentee relationships in virtual settings promote professional learning and reflective teaching practices. Schmidt-Crawford et al. (2022) also emphasized that consistent virtual mentoring helps preservice teachers build confidence and instructional skills, regardless of age or gender.

IV. CONCLUSION AND RECOMMENDATION

The study reveals that both the student-teacher and cooperating teacher respondents are female, with the student-teacher in early adulthood and the cooperating teacher in middle adulthood, having over 15 years of teaching experience. Assessment of the virtual internship program shows that cooperating teachers consistently rate "Always" in areas such as teaching-related assessment, mentoring, and the use of virtual strategies. In contrast, student teachers display variability in their responses, indicating "Often" and "Moderate Knowledge" in key aspects like action research and the relevance of pedagogy to course objectives. These findings align with Vygotsky's Sociocultural Theory, which emphasizes the essential role of mentors (cooperating teachers) in scaffolding the learning experiences of novice teachers, particularly within virtual learning environments.

The analysis finds no significant difference in perceptions of the virtual internship program between student interns and cooperating teachers overall. However, significant differences emerge among cooperating teachers when grouped by age and years of teaching experience, particularly in areas related to action research, the relevance of pedagogy, and mentoring strategies. This supports **Knowles' Adult Learning Theory**, which suggests that adult learners (in this case, cooperating teachers) bring diverse experiences and learning preferences that influence how they adapt to and perceive new instructional models such as virtual internships. Conversely, no significant differences appear among pre-service teachers when grouped by age and sex, indicating a more uniform perception within this group, likely due to their shared generational familiarity with digital tools. These findings underscore the importance of experience and ongoing professional development in successfully adapting to virtual instructional models. The differing levels of digital

competence and pedagogical alignment among teachers highlight the need for targeted support and continuous learning. As digital literacy remains a vital 21st-century skill, the study reinforces the theoretical foundation of **Connectivism**, which emphasizes the value of networked learning and adaptability in digital environments—especially for pre-service teachers navigating a rapidly changing educational landscape.

The study provides important insights into the dynamics of virtual teaching internships during the COVID-19 pandemic. It highlights the strong role that experienced cooperating teachers play in mentoring pre-service teachers, especially in virtual settings where traditional classroom interactions are limited. It also points to disparities in digital competence and pedagogical readiness, suggesting that although student teachers may be digitally native, they still require structured support to apply their skills effectively in teaching contexts. Moreover, the absence of significant differences in perceptions between the two groups suggests a general acceptance of the virtual internship model, while also revealing areas for improvement, particularly in digital content delivery and the implementation of action research.

In conclusion, the study demonstrates that virtual internship programs bridge the gap between traditional and digital teaching models, but their success largely depends on the preparedness, support systems, and technological access available to both cooperating and student teachers. The findings underscore the importance of continuous professional development, equitable access to digital tools, and the need for mentoring strategies tailored to the virtual context. As education continues to evolve in the post-pandemic era, these insights guide institutions in refining virtual teaching internships to ensure they remain relevant, effective, and responsive to the needs of 21st-century learners and educators.

Future research should focus on evaluating the effectiveness of virtual internships compared to traditional formats, particularly in achieving learning outcomes and preparing students for future careers in education and related fields. It is essential to explore student perspectives, assess long-term impacts on professional growth, and examine whether virtual internships promote or hinder access for marginalized groups. Comparative and longitudinal studies, along with investigations into digital literacy, mentorship quality, and institutional support, will help refine virtual internship models and guide improvements in policy and curriculum development.

REFERENCES

- [1] Adedoyin, O. B., & Soykan, E. (2020). COVID-19 pandemic and online learning: The challenges and opportunities.

- Interactive Learning Environments*, 28(7), 1–13. <https://doi.org/10.1080/10494820.2020.1813180>
- [2] Ahsan, M. M., Ismail, N. A., & Ahmad, S. (2022). Digital literacy as a 21st-century competency for the digital economy: A conceptual review. *Education and Information Technologies*, 27, 1–20. <https://doi.org/10.1007/s10639-021-10872-3>
 - [3] Brown, A., & Green, T. D. (2021). The essentials of instructional design: Connecting fundamental principles with process and practice (4th ed.). Routledge.
 - [4] Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
 - [5] Darling-Hammond, L., Flook, L., Cook-Harvey, C. M., Barron, B., & Osher, D. (2017). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
 - [6] Galvan, S. C., Fisher, S., Casman, E., & Small, M. (2013). Virtual internships for science and engineering students: A pilot study. *Journal of Science Education and Technology*, 22, 383–395. <https://doi.org/10.1007/s10956-012-9401-0>
 - [7] Gegenfurtner, A., Zitt, A., & Ebner, C. (2018). Evaluating webinar-based training: A mixed-methods study of trainee reactions toward digital web conferencing. *International Journal of Training and Development*, 22(3), 221–231. <https://doi.org/10.1111/ijtd.12133>
 - [8] Gonzalez, J., Linville, D., & Ma, D. (2020). Action research as a means of professional development during the pandemic. *Educational Action Research*, 28(4), 571–589. <https://doi.org/10.1080/09650792.2020.1836681>
 - [9] Harris, L. R., Brown, G. T. L., & Harnett, J. A. (2020). Understanding classroom assessment: A multidimensional approach to assessment perceptions and practices. *Teaching and Teacher Education*, 88, 102965. <https://doi.org/10.1016/j.tate.2019.102965>
 - [10] Hudson, P. (2013). Mentoring as professional development: ‘Growth for both’ mentor and mentee. *Professional Development in Education*, 39(5), 771–783. <https://doi.org/10.1080/19415257.2012.749415>
 - [11] Johnson, M., Veletsianos, G., & Seaman, J. (2021). U.S. faculty and administrators’ experiences and approaches in the early weeks of the COVID-19 pandemic. *Online Learning*, 25(1), 6–21. <https://doi.org/10.24059/olj.v25i1.2285>
 - [12] Kimmons, R., Rosenberg, J. M., & Allman, B. (2022). Technology integration frameworks for teacher preparation. *Contemporary Issues in Technology and Teacher Education*, 22(1), 129–147.
 - [13] Kini, T., & Podolsky, A. (2016). *Does teaching experience increase teacher effectiveness? A review of the research*. Learning Policy Institute. <https://learningpolicyinstitute.org/product/does-teaching-experience-increase-teacher-effectiveness-review-research>
 - [14] König, J., Jäger-Biela, D. J., & Glutsch, N. (2022). Adapting to online teaching during COVID-19 school closures: Teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education*, 45(2), 1–18. <https://doi.org/10.1080/02619768.2022.2029993>
 - [15] Lee, J., & Kim, H. (2022). Toward a pedagogy of care: Using reflective journaling and synchronous online discussions to support students during COVID-19. *Journal of Further and Higher Education*, 46(3), 400–413. <https://doi.org/10.1080/0309877X.2021.1969500>
 - [16] Marchbank, J. (2013). *Women, education, and inequality: Changing patterns in a changing world*. Routledge.
 - [17] Martin, B., & Heller, R. (2011). Integrating technology into teacher education: A case study of an emerging community of practice. *Contemporary Issues in Technology and Teacher Education*, 11(3), 254–274.
 - [18] Mason, C., Khan, K., & Smith, M. (2016). Promoting digital literacy in the 21st century. *Journal of Educational Technology Systems*, 45(2), 202–218. <https://doi.org/10.1177/0047239516674062>
 - [19] Mertler, C. A. (2012a). *Action research: Improving schools and empowering educators* (3rd ed.). SAGE Publications.
 - [20] Mertler, C. A. (2012b). *Action research: Teachers as researchers in the classroom*. SAGE Publications.
 - [21] Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
 - [22] Mwiria, K. (2015). *Teacher education in Africa: Achievements and challenges*. UNESCO.
 - [23] Nguyen, M., & Reid, S. (2021). A framework for virtual classroom action research: Lessons from pandemic teaching. *Teaching and Teacher Education*, 107, 103456. <https://doi.org/10.1016/j.tate.2021.103456>
 - [24] Schmidt-Crawford, D., Lindstrom, D., & Thompson, A. (2022). Mentoring in digital contexts: Practices and perceptions of virtual mentoring in teacher education. *Journal of Digital Learning in Teacher Education*, 38(1), 3–15. <https://doi.org/10.1080/21532974.2021.1985656>
 - [25] Smith, R., & Flores, B. (2023). Aligning pedagogy to objectives: Strategies for online teaching effectiveness. *Online Learning Journal*, 27(2), 89–105. <https://doi.org/10.24059/olj.v27i2.2992>
 - [26] Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*, 5(1), 1519143. <https://doi.org/10.1080/2331186X.2018.1519143>
 - [27] Trust, T., & Prestridge, S. (2021). Virtual mentoring in teacher education: Research-based recommendations. *International Journal of Educational Research Open*, 2, 100065. <https://doi.org/10.1016/j.ijedro.2021.100065>
 - [28] Trust, T., & Whalen, J. (2021). K–12 teachers’ experiences and challenges with using technology for emergency remote teaching during the COVID-19 pandemic. *TechTrends*, 65, 371–379. <https://doi.org/10.1007/s11528-021-00625-2>
 - [29] Zeichner, K. (2018). The role of practitioner research in teacher education. *Educational Action Research*, 26(1), 4–20. <https://doi.org/10.1080/09650792.2017.1388725>